

In the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A measuring cell comprising at least one tube capable of guiding light within a fluid contained therein, wherein the at least one tube comprises
 - a) ~~an input~~ a first opening,
 - b) ~~an output~~ a second opening and
 - c) an inner surface coated with at least one binding agent capable of binding at least one target from a sample,wherein the inner surface of the at least one tube is exposed to ~~[[a]]~~ said fluid sample by flowing loading the said sample into through the input first opening into said at least one tube, through the tube and out from the output opening.
2. (Currently Amended) The measuring cell of claim 1., wherein the fluid and the sample ~~[[is]]~~ are independently liquid or gaseous.
3. (Currently Amended) The measuring cell of claim 1., wherein the flows of the fluid and the sample are ~~can be~~ regulated.
4. (Currently Amended) The measuring cell of claim 3., wherein the flows of the fluid and the sample ~~[[is]]~~ are regulated by at least one means chosen from pressure, or by gravity, or by capillary forces, and or by electrophoresis.
5. (Currently Amended) The measuring cell of claim 1., wherein the ability of the at least one tube to guide light within a fluid contained within the at least one tube is ~~either due to the structure of the inner surface of the at least one tube, is due to an inherent property of the material used to construct the tube,~~

~~is a result of features designed within the material building the tube or is a result of features designed within a material surrounding the tube.~~

6. (Currently Amended) The measuring cell of claim 1., wherein the inner surface of the at least one tube optionally comprises ~~may be composed of one or more layers, which chosen from can be made of an organic materials and or of an inorganic materials, or of a combination of both materials and/or can work as an optical coating.~~
7. (Currently Amended) The measuring cell of claim 1., further comprising a material surrounding the at least one tube, which material or its structure ~~resulting results~~ in the at least one tube guiding light within a fluid contained within the at least one tube.
8. (Currently Amended) The measuring cell of claim 1., wherein the at least one tube is either a fluid core waveguide ~~hollow fiber~~ or a photonic bandgap crystal.
9. (Currently Amended) The measuring cell of claim 1., wherein the at least one capture agent is directly bound to the inner surface of the at least one tube.
10. (Currently Amended) The measuring cell of claim 1., further comprising an interstitial layer between the at least one capture agent and the inner surface of the at least one tube, wherein the interstitial layer may be a single layer or a multi-layer.
11. (Currently Amended) The measuring cell of claim 1., wherein the inner surface of the at least one tube is coated with an additional agent that prevents or retards non-specific adsorption and/or non-specific binding of the target

and/or other components of the sample.

12. (Currently Amended) The measuring cell of claim 1., wherein the inner surface of the at least one tube is coated with an additional layer which interacts with the at least one bound target in such a way that it changes the properties of the light guided through the at least one tube.
13. (Currently Amended) A system comprising:
- a. at least one light emitting element;
 - b. at least one primary light connecting element;
 - c. at least one measuring cell comprising at least one tube capable of guiding light within a fluid contained therein, wherein the at least one tube comprises
 - i. ~~an input~~ a first opening,
 - ii. ~~an output~~ a second opening, and
 - iii. an inner surface coated with at least one binding agent capable of binding at least one target from a sample,wherein the inner surface of the at least one tube is exposed to a fluid sample by loading ~~flowing~~ the sample ~~into~~ through the ~~input~~ first opening, ~~through into the~~ at least one tube and out ~~from the output~~ through either the first or second opening;
 - d. at least one secondary light connecting element;
 - e. at least one light detecting element and
 - f. at least one fluid dispensing element;
- wherein the at least one fluid dispensing element dispenses the sample to the at least one measuring cell;
- further wherein the light emitted by the at least one light emitting element is transmitted into the fluid contained within ~~[[to]]~~ the at least one measuring cell by at least one primary light connecting element;

further wherein the light guided through the fluid contained within the at least one measuring cell is transmitted to the at least one light detecting element by the at least one secondary light connecting element;
further wherein the amount of light or the variation of at least one property of the light detected by the at least one light detecting element relates to the amount or to a change of structure and/or properties of the at least one target bound to the at least one capture agent on the inner surface of the at least one tube of the at least one measuring cell.

14. (Currently Amended) The system of claim 13., where the at least one light emitting element is selected from ~~the group consisting of~~:
- a. a laser;
 - b. a Light Emitting Diode;
 - c. a white light source and
 - d. a Vertical Cavity Surface Emitting Laser.
15. (Currently Amended) The system of claim 13., where the at least one light emitting element is a combination or an array of elements selected from ~~the group consisting of~~:
- a. a laser;
 - b. a Light Emitting Diode;
 - c. a white light source and
 - d. a Vertical Cavity Surface Emitting Laser.
16. (Currently Amended) The system of claim 13., where the at least one light detecting element is selected from ~~the group consisting of~~:
- a. a Photomultiplier Tube;
 - b. a camera and
 - c. a photodiode.

17. (Currently Amended) The system of claim 13., where the at least one light detecting element is a combination or an array of elements selected from ~~the~~ group consisting of:
- a. a Photomultiplier Tube;
 - b. a camera and
 - c. a photodiode.
18. (Currently Amended) The system of claim 13., where the at least one primary and the at least one secondary light connecting elements are independently selected from ~~the group consisting of:~~
- a. an optical window;
 - b. a lenslet array;
 - c. a spectral filter;
 - d. a partially reflecting mirror;
 - e. an intensity filter and
 - f. a grating index coupler.
19. (Original) The system of claim 13., where the at least one primary and/or at least one secondary light connecting element is also a liquid dispensing element.
20. (Original) The system of claim 13., where the at least one primary light connecting element and/or the at least one secondary light connecting element are/is integrated into the measuring cell.
21. (Original) The system of claim 13., where the at least one liquid dispensing element is capable of transferring liquid to and from the at least one measuring cell.

22. (Original) The system of claim 13. further comprising at least one sample reservoir.
23. (Original) The system of claim 13. further comprising at least one disposal reservoir.
24. (Currently Amended) The system of claim 13., wherein the fluid and sample ~~[[is]]~~ are independently liquid or gaseous.
25. (Currently Amended) The system of claim 13., wherein the flows of the fluid and the sample ~~[[is]]~~ are regulated.
26. (Currently Amended) The system of claim 13., wherein the flows of the fluid and the sample ~~[[is]]~~ are regulated by at least one means chosen from pressure, or by gravity, or by capillary forces, and or by electrophoresis.
27. (Currently Amended) The system of claim 13., wherein the ability of the at least one tube to guide light within a fluid contained within the at least one tube is ~~either due to the structure of the inner surface of the at least one tube, is due to an inherent property of the material used to construct the tube, is a result of features designed within the material building the tube or is a result of features designed within a material surrounding the tube.~~
28. (Currently Amended) The system of claim 13., wherein the inner surface of the at least one tube optionally comprises ~~may be composed of~~ one or more layers, which one or more layers is chosen from ~~can be made of~~ an organic materials and ~~or of an inorganic materials, or of a combination of both materials and/or can work as an optical coating.~~

29. (Currently Amended) The system of claim 13., wherein the at least one tube is either a fluid core waveguide ~~hollow fiber~~ or a photonic bandgap crystal.
30. (Currently Amended) The system of claim 13., wherein the at least one capture agent is directly bound to the inner surface of the at least one tube.
31. (Currently Amended) The system of claim 13., further comprising an interstitial layer between the at least one capture agent and the inner surface of the at least one tube, wherein the interstitial layer may be a single layer or a multi-layer.
32. (Currently Amended) The system of claim 13., wherein the inner surface of the at least one tube of the measuring cell is coated with an additional layer that prevents or retards non-specific adsorption and/or non-specific binding of the target and/or other components of the sample.
33. (Currently Amended) The system of claim 13., wherein the inner surface of the at least one tube is coated with an additional layer which interacts with the at least one bound target in such a way that it changes the properties of the light guided through the at least one tube.
34. (Withdrawn - Currently Amended) A method for detecting a target in a sample, which method comprises:
- a. introducing a sample to at least one measuring cell using at least one fluid dispensing element, wherein the measuring cell comprises at least one tube capable of guiding light within a fluid contained therein, wherein the at least one tube comprises:
 - i. ~~an input~~ a first opening;
 - ii. ~~an output~~ a second opening;

- iii. an inner surface coated with at least one binding agent capable of binding at least one target of a sample;
wherein the inner surface of the at least one tube is exposed to a ~~fluid~~ sample by flowing the sample through ~~into the input first opening, into~~ through the at least one tube and out through the first or second ~~from the~~ output opening;
 - b. connecting light, from at least one light emitting element, into the at least one measuring cell using at least one primary light connecting element, wherein the light is then guided through the at least one measuring cell where it interacts with the at least one bound target;
 - c. connecting light, using at least one secondary light connecting element, from at least one measuring cell where it interacted with at least one bound target, to at least one light detecting element;
 - d. detecting, with at least one light detecting element, the amount of light guided through the at least one tube or the variation of at least one property of the light guided through the at least one tube, wherein the amount of light or the variation of at least one of its properties relates to the amount or to a change of structure and/or properties of the at least one target bound to the at least one capture agent on the inner surface of the at least one tube of the at least one measuring cell;
 - e. determining or calculating the amount of the at least one target bound to the at least one capture agent.
35. (Withdrawn - Currently Amended) The method of claim 34., wherein the flows of the fluid and the sample ~~[[is]]~~ are regulated.
36. (Withdrawn - Currently Amended) The method of claim 34., wherein the flows of the fluid and the sample ~~[[is]]~~ are regulated by at least one means chosen from pressure, or by gravity, or by capillary forces, and or by electrophoresis.

37. (Withdrawn - Currently Amended) The method of claim 34., wherein the interaction of the at least one target with any agent and/or any layer bound or immobilized on the inner surface of the at least one tube changes the optical properties of either the bound target or of any agent or any layer bound or immobilized on the inner surface of the at least one tube.
38. (Withdrawn) The method of claim 34., further comprising the step of washing any unbound target and/or component of the sample from the at least one measuring cell before detecting the guided light.
39. (Withdrawn - Currently Amended) The method of claim 34., wherein the sample undergoes ~~the required number of~~ sample preparation steps before being introduced into the measuring cell.
40. (Cancelled)
41. (Withdrawn) The method of claim 34., wherein at least one cleaving and/or digesting agent is introduced into the at least one measuring cell, using at least one fluid dispensing element, after the at least one target is immobilized on the inner surface of the at least one measuring cell in a first step, and wherein the at least one cleaving and/or digesting agent modifies the structure of the at least one bound target.
42. (Withdrawn) The method of claim 34., wherein at least one second binding agent is introduced into the at least one measuring cell, using at least one fluid dispensing element, after the at least one target is immobilized on the inner surface of the at least one measuring cell in a first step, and wherein the at least one second binding agent is captured by the at least one bound target.

43. (Withdrawn - Currently Amended) The method of claim 42., wherein the guided light interacts with either the at least one target or with the at least one second binding agent or any agent or any layer bound or immobilized on the inner surface of the at least one tube before it is detected using the at least one detecting element.
44. (Withdrawn - Currently Amended) The method of claim 42., further comprising ~~or not~~ a washing step between any immobilization or detection step.
45. (Withdrawn - Currently Amended) The method of claim 42., wherein the at least one second binding agent has optical properties that enhance detection.
46. (Withdrawn) The method of claim 42., wherein the at least one second binding agent emits light or absorbs light generated by the at least one light emitting element.
47. (Withdrawn - Currently Amended) The method of claim 42., wherein the interaction of the at least one second binding agent with the at least one bound target and/or with any agent and/or any layer bound or immobilized on the inner surface of the at least one tube changes the optical properties of the second binding agent and/or of the bound target and/or of any agent and/or any layer bound or immobilized on the inner surface of the at least one tube.
48. (Cancelled)
49. (Withdrawn) The method of claim 42., further comprising the step of introducing at least one amplification agent to the at least one measuring cell, where the amplification agent binds to the at least one second binding agent.

50. (Withdrawn - Currently Amended) The method of claim 49., further comprising ~~or not~~ a washing step between any immobilization or detection step.
51. (Withdrawn) The method of claim 49., wherein the at least one second binding agent and/or the at least one amplification agent has optical properties that enhance detection.
52. (Withdrawn) The method of claim 49., wherein the at least one second binding agent and/or the at least one amplification agent emits light or absorbs light generated by the at least one light emitting element.
53. (Withdrawn - Currently Amended) The method of claim 49., wherein the interaction of the at least one amplification agent with the at least one bound target and/or with any agent and/or any layer bound or immobilized on the inner surface of the at least one tube changes the optical properties of the amplification agent and/or of the bound target and/or of any agent and/or any layer bound or immobilized on the inner surface of the at least one tube.
54. (Cancelled)
55. (New) The measuring cell of claim 1., wherein the at least one tube comprises a material capable of guiding light within the fluid contained within said at least one tube.
56. (New) The measuring cell of claim 1., wherein the at least one tube comprises a material having at least one feature wherein said at least one feature is capable of guiding light within the fluid contained within said at least one tube.

57. (New) The measuring cell of claim 1., wherein the inner surface of the at least one tube comprises an optical coating.
58. (New) The measuring cell of claim 57., wherein the inner surface of the at least one tube is exposed to said sample by loading the sample through the first opening into the at least one tube and out from either the first or the second opening.
59. (New) The system of claim 13., further comprising a material surrounding the at least one tube, which material or its structure resulting in the at least one tube guiding light within a fluid contained within the at least one tube.
60. (New) The system of claim 13., wherein the at least one tube comprises a material having at least one feature wherein said at least one feature is capable of guiding light within the fluid contained within said at least one tube.